ABSTRACT OF THE DISCLOSURE

A densimeter contains an inlet pipe section, a second pipe section joined to the downstream end of the inlet pipe section, and an outlet pipe section joined to the downstream end of the second pipe section. The inlet and outlet pipe sections are constrained by a support structure, while flexible couplings allow the second section of pipe to undergo a limited amount of radial motion relative to the adjacent pipe sections. The weight of the second pipe section is supported by a weight measuring unit, which continuously measures the weight of the second pipe section as fluid flows through the densimeter. One preferred embodiment of the invention uses the densimeter to measure the density of a proppant in a blender system for preparing fluid mixtures for fracturing and propping oil bearing geological formations.